Ladies and Gentlemen of the California Occupational Safety and Health Standards Board,

I (David Feerst) would like to propose an amendment to one of your Construction Safety Orders that contains obsolete information.

The Safety order proposed to be altered is located in Chapter 4> Subchapter 4> Article 35> Section 1905> (b). The Safety Order states, "The helicopter and fuel supply shall be securely bonded and grounded before and during fueling operations for static electrical discharge". [1]

Definitions – The Institute of Electrical and Electronics Engineers (IEEE) defines **bonded** as "the state of being mechanically and electrically connected to maintain the same potential". [2] The Institute of Electrical and Electronics Engineers (IEEE) defines **grounded** as "connection to the earth or to some extended body that serves instead of earth".[2]

Background – Many years ago it was accepted practice that fuel trucks should be bonded and grounded during aircraft fueling. This was accomplished in the field by driving a temporary grounding rod into the ground at the fueling location and hooking the truck to both the grounding rod, and to the aircraft to bring all three to ground potential. Research since has shown that the bond from aircraft to the fuel truck brings both vehicles to the same potential eliminating any chance of a spark which is caused by a difference in potential. Further studies suggest that a secondary connection from the truck to the ground may actually increase the likely hood of a spark in some situations. For these reasons both the FAA and NFPA recommend that the aircraft and the fuel truck are bonded, but <u>not</u> grounded.

Supporting Information - In a recent safety alert for aircraft operators published by the FAA 11/23/10, the FAA states:

> *Before fueling, the aircraft must be bonded to the fuel source to equalize static electricity between the fuel source and the aircraft. <u>Grounding of the aircraft and/or fuel truck is no longer recommended</u> because it does not prevent sparks at the fuel source, and the grounding cable may not be sufficient to discharge the electrical current.*[3]

Additionally, in National Fire Prevention Association (NFPA) 407, *Standard for Aircraft Fuel Servicing,* (revised 2007) it states:

> *Prior to making any fueling connection to the aircraft, the fueling equipment shall be bonded to the aircraft by use of a cable, thus providing a conductive path to equalize the potential between the fueling equipment and the aircraft. The bond shall be maintained until the fueling connections have been removed, thus allowing separated charges that could be generated during the fueling operation to reunite. <u>Grounding during aircraft fueling shall not be permitted.</u>*[4]

In light of these changes to industry standard, I ask that you remove the grounding requirement from Chapter 4> Subchapter 4> Article 35> Section 1905> (b) and amend 1905 (b) to state "The helicopter and fuel supply shall be securely bonded ~~and grounded~~ before and during fueling operations for static electrical discharge".

References

1. http://www.dir.ca.gov/Title8/1905.html
2. http://www.ieee.org/publications_standards/publications/subscriptions/prod/standards_dictionary.html
3. http://www.faa.gov/other_visit/aviation_industry/airline_operators/airline_safety/safo/all_safos/media/2010/SAFO10020.pdf
4. http://www.nfpa.org/catalog/product.asp?title=Code-407-2007-Aircraft-Fuel-Servicing&category%5Fname=Codes+and+Standards&pid=40707&target%5Fpid=40707&src%5Fpid=&link%5Ftype=category